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ABSTRACT

One problem faced by researchers is the selection of the most appropriate research method or methods, given the context of the research setting. This dilemma does not concern the choice of the best research method given the program objectives or research questions, nor the selection of the best state-of-the-art methods. The issue concerns the matching of the research method with the organization environment. It is possible that under certain specifiable environmental conditions, the researcher may select research methods for data collection and analysis that are neither ideal nor fully scientifically justifiable. However, the appropriate matching of the method with the environment may increase the likelihood that the design and report will be accepted by decision-makers at the program or policy level. A simple model is presented as a decision tool, with four key variables (political complexity, technical complexity, scale, and cost-benefit ratio) identified as principle dimensions of the decision environment. (Author/PN)

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MATCHING THE RESEARCH ENVIRONMENT TO THE RESEARCH METHOD: A DECISION MODEL FOR INCREASING THE LIKELIHOOD THAT EVALUATION RESEARCH WILL BE UTILIZED

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ABSTRACT

"Successful evaluation involves an interaction of methodology, bureaucracy and politics." (Franklin and Thrasher, 1976)

One problem faced by researchers is the selection of the most appropriate research method or methods given the context of the research setting. This dilemma does not concern the choice of the best research method given the program objectives or research questions nor the selection of the best state-of-the-art methods. The issue concerns the matching of the research method with the "buzzing, blooming" confusion of the organization environment. It is possible that under certain specifiable environmental conditions, the researcher may select research methods for data collection and analysis that are neither ideal or fully scientifically justifiable. However, the appropriate matching of the method with the environment may increase the likelihood that the design and report will be accepted by decision-makers at the program or policy level. To aid the reader in matching the environment and the method, a simple heuristic is presented as a decision tool.

Evaluators and their Environment

Hawkridge (1970) does not quite explicate the issue of matching evaluation methods to the organization environment when he distinguishes between doing research in open or closed systems. Since in the "..... social and behavioral sciences, closed systems are rare," (p. 35) he argues for a more holistic approach after Bertalanffy (1968) and for methods (multivariate, quasi-experimental) which control for the complexity of the numerous variables. Cunningham and McInnes (1978) distinguish four general program environments which, as in Patton (1968), recognize the differences in program objectives: goal attainment, integration, adaptation, and pattern maintenance (pp. 93-99). They do not operationally define these environments nor suggest selection of an evaluation design and method to fit the environment.

From Patton's most recent work (1980), the evaluator is told that he or she "..... must be sophisticated about matching methods to the nuances of particular evaluation questions and the idiosyncrasies of the specific decision-maker's needs" (p. 17, 1980) (my emphasis). The more mythical Halcolm, the wise, in his/her. Beautitudes notes

> "Issues of evaluation methodology are issues of strategy, not of morals.... That strategy is best which matches research methods to the evaluation questions being asked. The challenge is to decide which methods are most appropriate in a given situation." Idem

The evaluation research authors have recognized the importance of varying method with the research question and the objective of the agency.

The missing element from these authors' analyses and contingency models is the recognition that "the most appropriate situation" can include the organizational environment. That environment can be more ac-

curately described and understood before selecting the research method and form of analysis.

The Research Environment

One of the tasks of evaluation researchers is to monitor and interpret the environment in which the evaluation will be conducted and used. (Thompson (1967), Leifer and Delbecq, (1978), Miles, (1980), Tushman and Scanlan (1981)). A rich vein of management literature documents the importance of organizational environment as a concern for decision-makers. A parallel conceptually exists between the general organization environment and the environment into which an evaluator brings his theories and tools. It is the complexity of the organizational research environment that can be addressed by the organizational actors including researchers. Perrow (1979) suggests the importance of a detailed definition of environment toward demystifying its possible effects on organizations and Thompson (1964) suggests the need for organizations to "come to terms with their environments."

For this paper, four key variables (1) political complexity, (2) technical complexity, (3) scale and (4) cost-benefit ratio are identified as principle dimensions of the research-organization's decision environment.

At this juncture the key variables are defined in terms drawn from a broad reading of social science and behavioral literature. General support for these categories is drawn from Delbecq (1979), O'Connel (1974) Leifer and Delbecq (1978), Hall (1972), Miles (1980), Beach and Mitchell

(1978), and Rossi (1977). For example, Rossi noted that "In principle, the evaluation of action programs appears to be most appropriately undertaken through the use of experimental designs." However, Rossi also raises the issue of significant barriers to such research being conducted in an action setting. For example, "Political obstacles to the use of controls often make it hard to get acceptance of such designs." (p. 248)

EXHIBIT 1

Key Variables in the Evaluation Research Environment

Political Complexity. The greater the degree of "political complexity," the greater the disagreement on program goals, the greater the number of actual or perceived policy alternatives, the greater the presence of the issue in the mass media, the greater the ethical risks, the greater the number of polarized actors and the greater the perceived fragility of the issue.

Technical Complexity. The greater the degree of "technical complexity," the lower the expert awareness of issue variables, the lower the degree of expert agreement on variables, the lower the use of state-or-the-art knowledge and theory, the lower the knowledge use transfer potential, the lower the degree of communicability of the issue.

Cost-Benefit Ratio. The greater the cost-benefit ratio, the greater the perceived research direct costs, the greater the time constraints, the greater the perceived research policy recommendation costs and the smaller the anticipated or perceived research recommendation and program benefits.

Scale. Requirements to do cross-cultural, interorganizational and intraorganizational network (more than one unit) research comparisons of programs suggest "high scale," while single unit organizational studies suggest small scale. The use of panel or time series studies may increase the scale.

No order is assumed for these four variables in Exhibit 1, but it is assumed that judgement by experts, including evaluators and site or program managers, will permit determination of whether the complexity is "high" or "low."

In addition to understanding the research environment, it is useful to reexamine the various levels of complexity of research methods available to evaluators.

Research Complexity

Using research models from Bernstein and Freeman (1976), Rossi (1977), Patton (1978), and others, this section presents a brief typology or classification of the complexity evaluation research methods and designs.

Rossi (1977) labels alternative evaluation research methods as "soft." He recommends that soft methods, including correlational analysis, be utilized in a "reconnaissance phase" and in anticipation of the "experimental phase using more powerful controlled experimental designs" (p. 248). Churchill (1978) argues for the use of qualitative methods in the so-called "exploratory stage," descriptive statistics for a "description stage," and experimental design for a "causal stage" of research.

Using a more detailed approach, Bernstein and Freeman (1975) examined evaluation research produced for federal agencies to develop a research "quality" typology. The authors assigned a code (0-4 points) to various dimensions of evaluation research where a higher score represented higher quality. For example, the use of multivariate statistical procedures received a "4," descriptive statistics a "3," ratings of qualitative

data "2," and narrative data "1." Similarly, experimental designs received higher quality scores than narrative or descriptive studies. Other research dimensions included sampling, measurement, data analysis, and validity. Classic scientific method, quantitative analyses are clearly judged to be of higher quality by Bernstein and Freeman.

Patton's criticism of the evaluation research community's endearment to the "predominently technical, statistical and quantitative" paradigm provides an interesting contrast to Bernstein and Freeman and complements this author's perspective. Patton cogently argues that evaluation researchers have been too blindly accepting the Bernstein-Freeman values that quantification, statistics and experimental designs equal better research. He concludes that perhaps evaluation researchers should be willing to approach a problem using more qualitative and inductive methods, more subjective and holistic judgement and more dynamic and heterogeneous designs (1978, pp. 211-28 and 1980 p. 19).

While this paper concurs with Patton's forceful reminder of the value of alternative models for research, it argues that the several research alternatives may be selected according to varying research environments. Rather than quality or level of evolution, this paper's typology used dimensions of research which vary according to "complexity." Complexity is defined by four conditions:

1) degree of dependency upon computer or machine calculations.
2) degree of requiring state-of-the-art or controversial social science, statistical, financial or mathematical methods.
3) degree of reporting using numerical description rather than verbal or written description.
4) amount of time required to design, administer, and analyze the evaluation.

Exhibit 2 classifies research variables as "low," "medium," or "high" in complexity. For example, low complexity research sampling indicates a small convenience sample rather than a higher complexity random, representative sample. Similarly, the use of multivariate statistical analysis is of hither complexity than the use of descriptive statistics.

EXHIBIT 2

EVALUATION RESEARCH METHOD COMPLEXITY: CHARACTERISTICS

General Research Traits*	Low	Medium	High
Sampling	non-random cluster or non-systematic, convenience or haphazard	systematic, random, likely, representative	systematic, random, representative
Analysis	qualitative	qualitative and quantitative	quantitative
Statistical Procedures	none or narrative only	descriptive and ratings from qualitative data	multivariate
Design	descriptive, narrative	longitudinal, cross sectional, or quais-experimental without both randomization and control group	experimental or quasi-experimental with randomization and control
Research Techniques	unstructured interviews, general observations, critical incident reports, management by objective tasks	discrepancy questionnaire, structured interviews, nominal group technique, content analysis, readibility indices	discrepancy questionnaire with coorientation measures, controlled observation, Bales categories, and cross tabulation of results of the responses from 2 or more methods, experimental or quasi-experimental

* Suggested by Bernstein & Freeman (1975)

Patton reports that "methodological prejudice" has diminished since Campbell (1974) Cronbach (1975), the Evaluation Research Society (1978) and other individuals and groups associated with the dominant quantitative research paragdigm suggested that qualitative research is an appropriate research choice in what Patton calls the "paradigm of choices" (1980, pp. 19-20). To assist the evaluator in making those choices, a decision tool is developed which combines the environmental factors and method issues. It is now necessary to bring all of these elements together in one decision model. The relationship of the environmental and research variables is presented in the next section.

A Decision Tree for Evaluators

The evaluation researcher facing a research environment of varying complexity and knowing that he or she has the choice of several available research designs and methods is challenged to match the evaluation methods and designs most appropriate to the research setting. For example, under conditions of high political complexity, high technical complexity, high cost/benefit ratio and high scale, would a high, medium or low complexity research level be most likely to ensure the client's acceptance of your study's findings? Would the selection of a too complex or not complex enough research level reduce the likelihood that the client will accept your work?

Given the need to deal with a number of key variables (4) and the possible combinations (16) on levels of high or low complexity, a decision tree is utilized to illustrate the possible outcomes. The researcher

with the assistance of the program manager can use the tree as an aid or heuristic (aiding in search or discovery) to judge whether the environment is high or low on each of the four variables (Powers 1978). Despite this paper's efforts to define variables in objective operational terms, more subjective intuitive jury styled judgement shared among researchers and practitioners familiar with a specific program would be very helpful.

To use the model (see diagram next page) in a particular evaluation research situation, the researcher and program manager start at the left-hand side and work toward the right-hand side.* At each node the reader answers the question of whether the environment is high or low on a given variable. When an end branch is reached, the researcher and practitioner will find the suggested level of research complexity that is most appropriate to that combination of environmental variables. For example, if the researcher follows the dotted line from high political complexity, through low technical complexity, through low cost-benefit ratio, through low scale, the suggested research design methods will be "medium" in complexity. This particular abstract example can be illustrated by a real critical incident of a public training organization faced with evaluating its program associated with mental health issues in jails.

"Scoring" the Decision Tree

To reinforce the overall judgements by researchers, the decision tree can be primitively scored if we assign a value of "1" for low complexity, "2" for medium and "3" for high. To assist with this test of

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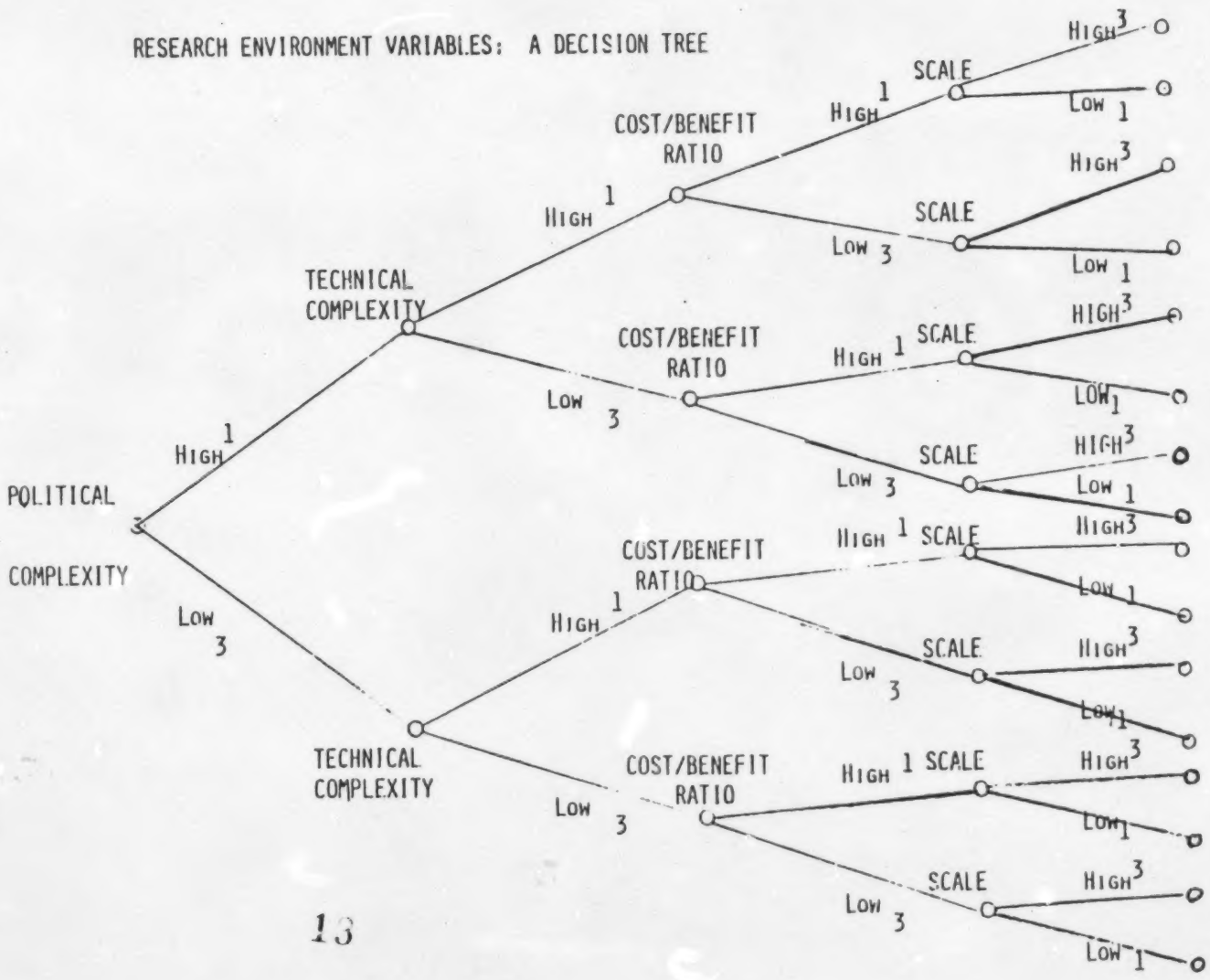
* No implications of ranking or order are implied at this level of discussion. That is, political complexity could appear third with no impact on the outcome.

MULTIPLE PRE-CONDITIONS AND VARIABLES

RESEARCH ENVIRONMENT VARIABLES: A DECISION TREE



SUM	X	EVALUATION
6	1.5	MEDIUM-LOW
4	1.0	LOW
8	2.0	MEDIUM
6	1.5	MEDIUM-LOW
8	2.0	MEDIUM
6	1.5	MEDIUM-LOW
10	2.5	MEDIUM-HIGH
8	2.0	MEDIUM
8	2.0	MEDIUM
6	1.5	MEDIUM-LOW
10	2.5	MEDIUM-HIGH
8	2.0	MEDIUM
10	2.5	MEDIUM-HIGH
8	2.0	MEDIUM
12	3.0	HIGH
10	2.5	MEDIUM-HIGH

RESEARCH COMPLEXITY LOW (1) MEDIUM (2) HIGH (3)

the tree's validity, each key variable can be independently (intuitive single or jury judgement) assigned a value of "3" for high and "1" for low (medium variable complexity is not rated). For example, high political complexity requires a research complexity at a lower level or "1." Low cost/benefit ratio suggests more high complex research or "3." Along the branches of the decision tree each independent judgement can be summed and then divided by the number of variables (4) for a "mean" score. (Hays (1973) indicates that the use of means for such ordinal scale values can be meaningful for internal judgements while not acceptable under normal parametric assumptions.) In addition to the scored mean at the end of each branch indicating the appropriate level of research complexity, e.g., "1," "2," or "3," a fraction, e.g., "1.5" indicates the possible use of multiple methods or shared designs overlapping two complexity levels.

EXHIBIT 3

CRITICAL INCIDENT: MENTAL HEALTH IN JAILS*

An offical of a state and federally funded program to train local jail officers to more effectively screen and deal with prisoners who may be physically and mentally ill needed to evaluate the effectiveness and efficiency of the training programs. On the one hand, there were severe federal and state funding cutbacks and a debate among local law enforcement officials over whether the program should continue, while on the other hand, there were demands by mental health professionals and the American Medical Association that the training be made mandatory. This debate contributed to the urgency of the evaluation and its resultingrating (high political complexity).

According to the project's technical consultant, the training team can:
1) reasonably document the reduced number of suicides, suicide attempts, and other medical difficulties previously recognized in unscreened prisoners,
2) demonstrate the feasibility of the training program's continued effectiveness in various jail settings, and
3) point to authoritative sources which empirically and legally document the need for at least minimum training (low technical complexity.)

The trainers, their agency and the state law enforcement officials, enforcement association leaders, and mental health agency and association representatives saw a high pay off if the research can document the program's success. Such information will place them at an advantage over other programs likely to be cut. It will reduce the risks of lawsuits against agencies. In addition, the social benefits equal or exceed the costs of the research (low cost-benefit ratio).

Finally, the research project will collect information in a statewide poll from seventy law enforcement agencies and thirty mental health centers (high scale).

* "Report on Mental Health Problems and Service Opportunities in Wisconsin County Jails: A statewide survey of mental health corodinator's and jail administrator's knowledge and attitudes." by Clarke L. Caywood in Conference Report: Initiating and Improving Mental Health Service in Local Jails, Drakin, Martin & Keith Lang, Clarke L. Caywood, Allan Pearson (1980) Department of Health & Social Services, State of Wisconsin.

In the above example, the researcher would be advised to use more research complexity than qualitative and descriptive narratives, general discussions with elites, general monitoring of press coverage, letters from the public, etc. In short, the situation seemingly demanded greater research complexity than even an extremely insightful and well-written case analysis can provide. The known technical nature of the issue and the perceived and actual benefits of research demand a higher level of research complexity.

For example, the design might include: 1) a systematic random sampling of public opinion (telephone interviews by university or private research agency), 2) a structured elite interview schedule (structured interview, nominal group), 3) comparative analysis of the interpretation of the data and issue by various officials (discrepancy coorientation questionnaire), and 4) careful narrative reporting of the findings with descriptive statistics and ratings.

The complexity of the issue may demand research methods that are less complex and more widely understood and accepted by a broader range of managers, policy-makers, and publics.

Conclusion

This paper raises several disparate issues: research environmental variables, level of research method complexity, and the interaction of these in matching the method to the environment. It has been suggested that more variables may affect any specific research project even more than the suggested four key variables. If researchers observe such a

situation, the paper will still have accomplished its major objective to alert the evaluation researcher to the constraints of the organization environment on his or her choice of alternative research designs and methods of analysis. To paraphrase Patton, the "paradigm of choices" may be more of a "paradox of choices" when the evaluator fully recognizes the constraints of the research environment on the selection of the most appropriate research method. The acceptance and viability of evaluation research in the action setting is dependent upon the evaluator's astute matching of research methods to the research question, the organization's program goal and the research environment or, as Franklin and Thrasher note,

> "Ideally, successful evaluation depends on the evaluator's ability to collect, organize, and relate data to meaningful patterns, to translate these patterns into a common conceptual framework shared with administrators and practitioners; and to feed the result back to administrators and practitioners in a manner most likelly to be accepted .....Successful evaluation involves an interaction of methodology, bureaucracy and politics." (Franklin and Thrasher, p. 91).

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